CLAIMS

1. A method for electrophoresis of nucleic acids, said method comprising the following steps:

a) electrophoresing nucleic acid samples using an electrophoresis apparatus on which plural 10- to 30-cm square gel plates are installed at a time and with which 32 or more nucleic acid samples per gel plate are electrophoresed simultaneously, and

b) detecting nucleic acid bands on the gels after the electrophoresing.

2. The method according to claim 1, wherein the electrophoresing is performed using gels with discontinuous buffer system.

3. The method according to claim 1, wherein the nucleic acid samples are single-stranded DNAs prepared by dissociation of double-stranded DNAs through denaturation and the electrophoresing is performed using denaturing gels.

4. The method according to claim 1, wherein the detecting of the nucleic acid bands on the gels is performed by fluorescent staining or silver staining.

5. The method according to any one of claims 1, 2, or 4, wherein the method is performed in order to detect a polymorphism of genomic DNAs among test individuals.

6. The method according to claim 3, wherein the method is performed in order to detect a polymorphism of genomic DNAs among test individuals.

7. The method according to claim 5, wherein the nucleic acid samples are DNA fragments amplified by AFLP method.

8. The method according to claim 5, wherein the nucleic acid samples are heteroduplex DNAs.

9. A method for preparing DNA fragments comprising a polymorphism, said method comprising a step of isolating, from gels, DNA fragments comprising a polymorphism detected by the method according to any one of claims 5 through 8.

10. A DNA fragment comprising a polymorphism among test individuals, said DNA fragment being isolated by the method according to claim 9.

11. The method according to any one of claims 1 through 8, wherein the method is performed in order to carry out genetic analysis.

12. The method according to claim 11, wherein the genetic analysis is F2 analysis, RI (recombinant imbred) analysis, or QTL (Quantitative Traits Loci) analysis.

13. The method according to any one of claims 1 through 8, which is performed to construct a genetic map of an organism.

14. A genetic map of an organism, said genetic map being constructed by using, as markers, bands of genomic DNAs comprising a polymorphism detected by the method according to claim 13.

15. A method for selecting, from a genomic DNA library, a clone corresponding to a particular nucleic acid band on a gel detected by the method according to any one of claims 1 through 8, said method comprising the following steps:

a) dividing a genomic DNA library of a particular organism into plural sublibraries each of which has a size of 1 or less genome of the organism;

b) assigning, to all clones included in each of the sublibraries, a row number, a column number, and a plate number of the sublibrary, wherein the row, column, and plate are referred to as X coordinate, Y coordinate, and Z coordinate, respectively;

c) detecting a band by collecting clones representing a particular row of all plates (X-coordinate clone group), clones representing a particular column of all plates (Y-coordinate clone group), and all clones on a particular plate of one sublibrary (Z-coordinate clone group); by extracting DNAs from each of the collected clone groups to obtain coordinate samples; by preparing a genomic DNA from the organism as a control; and by electrophoresing the coordinate samples and the control in a line using the method according to any one of claims 1 through 4;

d) determining a clone in each of the X-coordinate clone group, the Y-coordinate clone group, and the Z-coordinate clone group, said clone corresponding to a band with the same mobility on the gel as that of the nucleic acid of interest in the control; and

e) selecting, from the sublibrary, a clone corresponding to the determined three-dimensional coordinate.

16. The method according to claim 15, wherein the method is performed in order to construct contigs covering the entire genomic DNA of a particular organism.

17. An electrophoresis apparatus for electrophoresis of nucleic acids, wherein plural 10- to 30-cm square gel plates are installed on said electrophoresis apparatus at a time and 32 or more nucleic acid samples per gel plate are electrophoresed with said electrophoresis apparatus simultaneously.